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मध - 062

ELECTIVE - I

Data Communication & Design (New)

(1251)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Draw diagrams wherever necessary.

UNIT - I

1. Solve any two. 20

- a) For a binary data stream 100110010
Draw the following formats.
 - i) Polar RZ
 - ii) Polar NRZ
 - iii) Bipolar NRZ
 - iv) Split Phase Manchester
 - v) quaternary encoding.
- b) Explain the difference between source encoding and channel encoding. What is channel capacity ? Explain Shannon's theorem on channel capacity to show the relationship between channel capacity and bandwidth.
- c) What is the relation between data transmission rate and bandwidth ? Describe various impairments in data transmission.

UNIT - II

2. Solve any two. 20

- a) What is MODEM ? With a neat diagram describe 56 K MODEM in detail.
- b) Explain with neat diagram QAM Transmitter alongwith signal space diagram.
- c) What is dial - up MODEM ? With appropriate sketch explain EIA 232.

UNIT - III

3. Solve **any two**. 20
- Explain in detail the concept & packet switching ? How it improves the performance of network ? Describe the datagram and virtual circuit approach.
 - What are the element of SONET ? With appropriate presentation describe SONET frame format.
 - With appropriate diagrammatic presentation describe T - 1 channel bank and show that output bit rate of T - 1 bank is 1.544 mbps.

UNIT - IV

4. Solve **any two**. 20
- What are guided & unguided media ? Explain wireless transmission through guided media as applicable to satellite communication system. What is the function of transponder in satellite.
 - List various advantages & optical fiber. What is step index & graded index fiber. Explain in detail with appropriate diagram.
 - With a necessary diagram explain transmission characteristic & physical description of unshielded twisted pair cable.

UNIT - V

5. Solve **any two**. 20
- With appropriate diagram describe IEEE 802.3 standard. Draw the frame tennat of the same. Explain each field in the frame.
 - Explain the concept of CSMA | CD mechanism. What is p - persistant & non - persistant CSMA.
 - Compare TDMA, FDMA & CDMA with proper diagrams.
